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ADDISON WESLEY

Ontario

# Math Makes Sense

2

Ontario 2005

## Curriculum Companion

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# Using Your Curriculum Companion

**Addison Wesley Mathematics Makes Sense** is a comprehensive program designed to support teachers in delivering core mathematics instruction in a way that makes mathematical concepts accessible to all students — letting you teach for conceptual understanding, and helping students make sense of the mathematics they learn. **Addison Wesley Mathematics Makes Sense** was specifically written to provide 100% curriculum coverage for Ontario teachers and students. The **Math Makes Sense** development team wrote, reviewed, and field-tested materials according to the requirements of The Ontario Curriculum, Mathematics, released in 1997. Now, with Ontario's initiative of Sustaining Quality Curriculum, the same development team is pleased to provide further support in this **Curriculum Companion**.

Your Curriculum Companion provides you with the specific support you need to maintain 100% curriculum coverage according to the revised 2005 release of The Ontario Curriculum. In this module, you will find:

## What's New at Grade 2?

This one-page overview provides your year-at-a-glance, with notes detailing where new curriculum requirements have arisen in the 2005 curriculum.

## Unit Planning Charts

For each unit, a one-page overview that recommends required or optional lessons, and indicates whether this module provides additional teaching support to ensure curriculum coverage.

## Curriculum Focus Notes

The revised curriculum introduced some new expectations that already form part of the overall conceptual framework on which your Grade 2 program was built. In order to meet these expectations in a more explicit way, **Curriculum Focus Notes** suggest ways that you might use the **Math Makes Sense 2** Student Book lesson content to address the expectations. If relevant, the suggestion includes use of an **Extra Practice** master, available in reproducible form following the teaching notes.

**Curriculum Focus Notes** follow in sequence, where relevant, after the **Unit Planning Chart**.

## Reproducible Masters, with Answers

You will find reproducible masters provided for any expectation that requires such additional support. Answers for masters are provided with the teaching notes.

## Curriculum Correlation

Go to page 20 to find detailed curriculum correlation that demonstrates where each expectation from your Grade 2 curriculum is addressed in **Addison Wesley Math Makes Sense 2**.

## What's New at Grade 2?

Unit	Curriculum Focus Notes	Curriculum Focus Masters
2	Lesson 1: Building Numbers to 20	Line Master 21
	Lesson 4: Number Facts to 18	
	Lesson 9: Counting Patterns beyond 100	
6	Lesson 2: Comparing Solids	

## Unit 1 Sorting and Patterning

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Sorting by Two Attributes	Required	
Lesson 2: Make a Pattern	Required	
Lesson 3: Representing Patterns in Different Ways	Required	
Lesson 4: Strategies Tool Kit	Required	
Lesson 5: Show What You Know	Optional, but recommended	

**Lesson 5:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Unit 2 Number Relationships

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Building Numbers to 20	Required: see Focus Note 2.1	Line Master 21, Line Master 8, number cubes labelled 1 to 6, paper, “launch-able” object (paper airplane or model rocket)
Lesson 2: Counting Collections	Required	
Lesson 3: Counting on a Number Line	Required	
Lesson 4: Number Facts to 18	Required: see Focus Note 2.4	
Lesson 5: Related Facts	Required	
Lesson 6: Doubles and near Doubles	Required	
Lesson 7: Estimating Large Numbers	Required	
Lesson 8: Numbers to 100	Required	
Lesson 9: Counting Patterns beyond 100	Required: see Focus Note 2.9	
Lesson 10: Strategies Tool Kit	Required	
Lesson 11: Show What You Know	Optional, but recommended	

**Lesson 11:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Lesson 1: Building Numbers to 20

### Focus Note 2.1

#### Curriculum expectations:

- Read and print in words whole numbers to twenty, using meaningful contexts.
- Count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100, using number lines and hundreds charts.

#### Curriculum Focus

Your curriculum requires children to read and print in words whole numbers. The numbers should be in the context of real-life applications.

Have children complete Line Master 21: Names for Numbers.

#### Answers to Line Master 21:

1. nine    2. five    3. twelve    4. sixteen    5. twenty

Your curriculum also requires children to count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100.

Use the Activity Bank activities below to cover these curriculum requirements.

#### Silent Toss

**Materials:** number cubes labelled 1 to 6, paper

Have children work in small groups.

- Tell children this is a quiet game and they should not speak.
- Provide each group with 2 number cubes and paper.
- Have children toss the 2 cubes at the same time and count the total of the 2 numbers showing.
- Have a child from each group write the total number in words on paper and hold it up.
- Children take turns as the recorder of every toss.
- For variation, make the group with the highest total the "winner."

#### Blast-Off!

**Materials:** 100-chart, paper airplane, model rocket, or another "launch-able" object

Have children work in pairs.

- Provide each pair of children with a 100-chart and a model to "launch."
- Have children locate 50 on the 100-chart. Ask them to point to each number on the chart as they count backwards by 1s. When they reach 0, have them launch their model.
- Repeat with a number less than 50.
- Then have children start at 100 and count backwards by 10s. When they reach 10, have them launch their model again.
- Repeat by starting with a number less than 100.

## Lesson 4: Number Facts to 18

### Focus Note 2.4

#### Curriculum expectation:

Identify, through investigation, the properties of zero in addition and subtraction (i.e., when you add zero to a number, the number does not change; when you subtract zero from a number, the number does not change).

#### Curriculum Focus

Your curriculum requires that children know and understand the properties of 0 in regards to addition and subtraction.

Have children summarize the effects of drawing a numeral card with 0 during *Explore*.

Ask:

- What did you notice about the answer to your addition or subtraction sentence when one of the numeral cards drawn was a 0?  
(*The answer was the same as the other numeral.*)

## Lesson 9: Counting Patterns beyond 100

### Focus Note 2.9

#### Curriculum expectation:

Identify, describe, and create, through investigation, growing patterns and shrinking patterns involving addition and subtraction, with and without the use of calculators.

#### Curriculum Focus

Your curriculum requires that children work with patterns involving addition and subtraction, with and without the use of calculators.

Have children complete *Activity: Skip Counting on the Calculator* on page 37 of the Teacher Guide. Extend the activity by starting with a number such as 100, and using the “minus” key instead of the “plus” key.

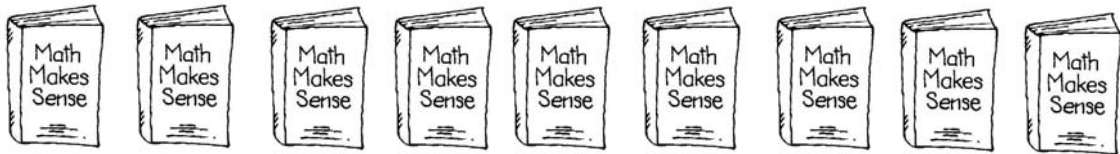
Name: \_\_\_\_\_

Date: \_\_\_\_\_

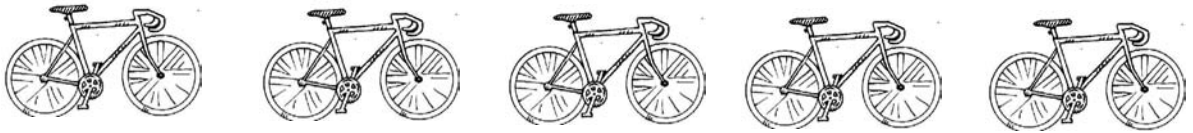
Line Master 21

## Names for Numbers

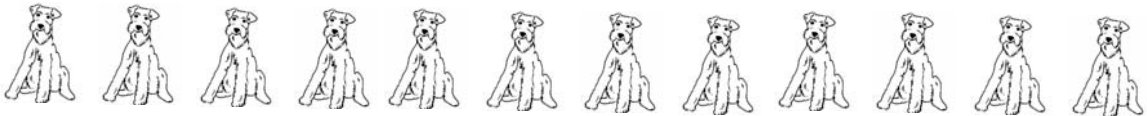
Write a number word to complete each sentence.



There are \_\_\_\_\_ books.



There are \_\_\_\_\_ bicycles.



There are \_\_\_\_\_ dogs.



There are \_\_\_\_\_ pairs of scissors.



There are \_\_\_\_\_ coins.

## Unit 3 Time, Temperature, and Money

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Passage of Time	Required	
Lesson 2: Units of Time	Optional, but recommended	
Lesson 3: Telling Time	Required	
Lesson 4: Calendar Time	Required	
Lesson 5: Temperature	Required	
Lesson 6: Making Money Amounts	Required	
Lesson 7: Strategies Tool Kit	Required	
Lesson 8: Show What You Know	Optional, but recommended	

**Lesson 2:** Although this material is not directly required by the Grade 2 curriculum, this lesson serves as a valuable introduction to the concept of time.

**Lesson 8:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Unit 4 Exploring Addition and Subtraction

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Adding with Three Addends	Required	
Lesson 2: Adding Two-Digit Numbers Using Invented Strategies	Required	
Lesson 3: Adding 10s	Required	
Lesson 4: Adding One- and Two-Digit Numbers	Required	
Lesson 5: Subtracting Two-Digit Numbers Using Invented Strategies	Required	
Lesson 6: Subtracting One- and Two-Digit Numbers	Required	
Lesson 7: Strategies Tool Kit	Required	
Lesson 8: Show What You Know	Required	

## Unit 5 Data Management and Probability

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Probability	Required	
Lesson 2: Strategies Tool Kit	Required	
Lesson 3: Making a Bar Graph	Required	
Lesson 4: Conducting a Survey	Required	
Lesson 5: Interpreting a Graph	Required	
Lesson 6: Show What You Know	Required	

## Unit 6 3-D Geometry

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Sorting Solids	Required:	
Lesson 2: Comparing Solids	Required: see Focus Note 6.2	Line Master 3, 3-D solids, bag, 2 rectangular prisms of different colours, sizes, and textures (wood/plastic)
Lesson 3: Building with 3-D Solids	Required	
Lesson 4: Build a Model	Required	
Lesson 5: Build a Skeleton	Required	
Lesson 6: Strategies Tool Kit	Required	
Lesson 7: Show What You Know	Optional, but recommended	

**Lesson 7:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Lesson 2: Comparing Solids

### Focus Note 6.2

#### Curriculum expectation:

Distinguish between the attributes of an object that are geometric properties and the attributes that are not geometric properties, using a variety of tools.

#### Curriculum Focus

Your curriculum requires that children distinguish between the geometric and non-geometric properties of an object.

Use the Activity Bank activities below to cover this curriculum requirement.

#### How Many Do I Have?

**Materials:** 3-D solids, bag, LM 3

Have children work as a class.

- Place a solid inside a bag. Have children investigate the solid from the outside.
- Ask:
  - How many faces does it have?
  - How many edges does it have?
  - How many vertices does it have?
- Ask children to name the solid based on these clues, using a copy of LM3: Geometric Solids.
- Have children explain their choice.
- Ensure children recognize that these attributes are geometric properties; they are used to describe and define a geometric solid.

#### Look and Feel

**Materials:** 2 rectangular prisms of different colours, sizes, and textures (wood/plastic)

Have children work as a class.

- Have children look at the prisms. Ask:
  - Do they have the same colour?
- Have children feel the prisms. Ask:
  - Do they feel the same?
  - Are they of the same size?
- Ask children to name the 2 solids based on these clues. Have them explain their choice.
- Ensure children recognize that these attributes are non-geometric properties; they can be used to describe any object, such as a shoe or a T-shirt.

## Unit 7 Addition and Subtraction to 100

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Place Value and Equivalent Groupings	Required	
Lesson 2: Adding Two-Digit Numbers	Required	
Lesson 3: Recording Addition with the Standard Algorithm	Required	
Lesson 4: Subtracting Two-Digit Numbers	Required	
Lesson 5 Recording Subtraction with the Standard Algorithm	Required	
Lesson 6: Strategies Tool Kit	Required	
Lesson 7: Show What You Know	Required	

## Unit 8 Linear Measurement, Area, and Perimeter

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Comparing Units of Length	Required	
Lesson 2: The Centimetre	Required	
Lesson 3: The Metre	Required	
Lesson 4: Centimetres and Metres	Required	
Lesson 5: Compare and Order Lengths	Required	
Lesson 6: Distance Around	Required	
Lesson 7: Area	Required	
Lesson 8: Strategies Tool Kit	Required	
Lesson 9: Show What You Know	Optional, but recommended	

**Lesson 9:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Unit 9 2-D Geometry

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Describing Figures	Required	
Lesson 2: Sorting and Comparing Figures	Required	
Lesson 3: Strategies Tool Kit	Required	
Lesson 4: Exploring Symmetry	Required	
Lesson 5: Symmetry	Required	
Lesson 6: Modelling Motion	Optional	
Lesson 7: Maps and Grids	Required	
Lesson 8: Show What You Know	Optional, but recommended	

**Lesson 8:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Unit 10 Multiplication, Division, and Fractions

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Introduce Multiplication Concepts	Required	
Lesson 2: More on Multiplication	Required	
Lesson 3: Introduce Division Concepts	Required	
Lesson 4: More on Division	Required	
Lesson 5: Fractions of a Whole	Required	
Lesson 6: Fractions of a Set	Optional	
Lesson 7: Strategies Tool Kit	Optional	
Lesson 8: Show What You Know	Optional, but recommended	

**Lesson 8:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Unit 11 Mass and Capacity

Lesson	Curriculum Coverage	Line Masters and Materials
Lesson 1: Comparing and Ordering Capacity	Required	
Lesson 2: Estimating Capacity	Required	
Lesson 3: Strategies Tool Kit	Required	
Lesson 4: Comparing and Ordering Mass	Required	
Lesson 5: Estimating Mass	Required	
Lesson 6: Show What You Know	Optional, but recommended	

**Lesson 6:** Although this material is not directly required by the Grade 2 curriculum, this lesson is recommended as a review of the material presented in this Unit.

## Correlation of Ontario Mathematics 2005 Curriculum to *Addison Wesley Math Makes Sense 2*

### Mathematical Process Expectations

The mathematical process expectations are to be integrated into student learning associated with all the strands.

*Throughout Grade 2, students will:*

Mathematical Process Expectations	<i>Addison Wesley Mathematics Makes Sense Grade 2, Correlation:</i>
<p><i>Problem Solving</i> apply developing problem-solving strategies as they pose and solve problems and conduct investigations, to help deepen their mathematical understanding;</p>	<p><i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Mathematics Centres; Activity Bank</b> suggestions; <b>Explore</b> activities; <b>Strategies Toolkits; Show What You Know; Cross-Strand Investigations.</b></p>
<p><i>Reasoning and Proving</i> apply developing reasoning skills (e.g., pattern recognition, classification) to make and investigate conjectures (e.g., through discussion with others);</p>	<p><i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Explore</b> activities; <b>Show &amp; Share</b> discussions; <b>Connect</b> summaries to model consolidation of concepts; <b>Show What You Know; Cross-Strand Investigations.</b></p>
<p><i>Reflecting</i> demonstrate that they are reflecting on and monitoring their thinking to help clarify their understanding as they complete an investigation or solve a problem (e.g., by explaining to others why they think their solution is correct);</p>	<p><i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Show &amp; Share</b> discussions in each <b>Explore</b>; selected <b>Practice</b> suggestions; journaling opportunities in the Student Book; <b>Connect</b> summaries to model the process of reflection during problem solving.</p>

*Throughout Grade 2, students will:*

<b>Mathematical Process Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Correlation:</b>
<i>Selecting Tools and Computational Strategies</i> select and use a variety of concrete, visual, and electronic learning tools and appropriate computational strategies to investigate mathematical ideas and to solve problems;	<i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Explore</b> activities; <b>Practice</b> suggestions; <b>Numbers Every Day</b> activities; <b>Technology</b> centers and activities; <b>Technology</b> lessons; <b>Show What You Know</b> ; <b>Cross-Strand Investigations</b> .
<i>Connecting</i> make connections among simple mathematical concepts and procedures, and relate mathematical ideas to situations drawn from everyday contexts;	<i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Literacy Links</b> ; <b>From the Library</b> ; <b>Cross-Curricular Connections</b> ; <b>Show What You Know</b> ; <b>Cross-Strand Investigations</b> ; <b>Explore</b> activities; <b>Math Centres</b> ; <b>Activity Banks</b> ; <b>Math at Home</b> pages in the Student Book.
<i>Representing</i> create basic representations of simple mathematical ideas (e.g., using concrete materials, physical actions, such as hopping or clapping; pictures; numbers; diagrams; invented symbols), make connections among them, and apply them to solve problems;	<i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Explore</b> activities; <b>Show &amp; Share</b> discussions; <b>Mathematics Centres</b> ; <b>Activity Banks</b> .
<i>Communicating</i> communicate mathematical thinking orally, visually, and in writing, using everyday language, a developing mathematical vocabulary, and a variety of representations.	<i>Throughout the program.</i> In addition to the ongoing developmental flow, supporting program features include: <b>Math Word Wall</b> suggestions; <b>Show &amp; Share</b> discussions in each <b>Explore</b> activity; <b>From the Library</b> and <b>Literacy Links</b> ; <b>Strategies Toolkit</b> lessons; <b>Cross-Strand Investigations</b> with <b>Take-Home Stories</b> .

## Number Sense and Numeration

### Overall Expectations

*By the end of Grade 2, students will:*

- read, represent, compare, and order whole numbers to 100, and use concrete materials to represent fractions and money amounts to 100¢;
- demonstrate an understanding of magnitude by counting forward to 200 and backwards from 50, using multiples of various numbers as starting points;
- solve problems involving the addition and subtraction of one- and two-digit whole numbers; using a variety of strategies, and investigate multiplication and division.

Students will:

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
<i>Quantity Relationships</i> represent, compare, and order whole numbers to 100, including money amounts to 100¢, using a variety of tools (e.g., ten frames, base ten materials, coin manipulatives, number lines, hundreds charts and hundreds carpets);	Unit 2 L1, L2, L3, L7, L8 Unit 3 L6, L7 Unit 1 L1
read and print in words whole numbers to twenty, using meaningful contexts (e.g., storybooks, posters, signs);	Unit 2 L1, with supporting BLM and TG activity
compose and decompose two-digit numbers in a variety of ways, using concrete materials (e.g., place 42 counters on ten frames to show 4 tens and 2 ones; compose 37¢ using one quarter, one dime, and two pennies);	Unit 2 L1, L2 Unit 3 L6, L7 Unit 7 L1
determine, using concrete materials, the ten that is nearest to a given two-digit number, and justify the answer (e.g., use counters on ten frames to determine that 47 is closer to 50 than to 40);	Unit 2 L3
determine, through investigation using concrete materials, the relationship between the number of fractional parts of a whole and the size of the fractional parts (e.g., a paper plate divided into fourths has larger parts than a paper plate divided into eighths);	Unit 10 L5
regroup fractional parts into wholes, using concrete materials;	Unit 10 L5 Unit 10 Math Centre Fraction Factory
compare fractions using concrete materials, without using standard fractional notation (e.g., use fraction pieces to show that three fourths are bigger than one half, but smaller than one whole);	Unit 10 L5, also Unit 10 Math Centre Fraction Factory

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
estimate, count, and represent (using the ¢ symbol) the value of a collection of coins with a maximum value of one dollar;	Unit 3 L6, L7
<i>Counting</i> count forward by 1's, 2's, 5's, 10's, and 25's to 200, using number lines and hundreds charts, starting from multiples of 1, 2, 5, and 10 (e.g., count by 5's from 15; count by 25's from 125);	Unit 2 L2, L3, L9, L10
count backwards by 1's from 50 and any number less than 50, and count backwards by 10's from 100 and any number less than 100, using number lines and hundreds charts;	Unit 2 L1, with supporting TG activity Also see Student Book pp. 33, 43, 44
locate whole numbers to 100 on a number line and on a partial number line (e.g., locate 37 on a partial number line that goes from 34 to 41);	Unit 2 L3, L8
<i>Operational Sense</i> solve problems involving the addition and subtraction of whole numbers to 18, using a variety of mental strategies (e.g., "To add $6 + 8$ , I could double 6 and get 12 and then add 2 more to get 14.");	Unit 2 L4, L5, L6 Unit 4 L1
describe relationships between quantities by using whole-number addition and subtraction (e.g., "If you ate 7 grapes and I ate 12 grapes, I can say that I ate 5 more grapes than you did, or you ate 5 fewer grapes than I did.");	Unit 2 L4, L5, L6 Unit 4 L1
represent and explain, through investigation using concrete materials and drawings, multiplication as the combining of equal groups (e.g., use counters to show that 3 groups of 2 is equal to $2 + 2 + 2$ and to $3 \times 2$ );	Unit 10 L1, L2
represent and explain, through investigation using concrete materials and drawings, division as the sharing of a quantity equally (e.g., "I can share 12 carrot sticks equally among 4 friends by giving each person 3 carrot sticks.");	Unit 10 L3, L4
solve problems involving the addition and subtraction of two-digit numbers, with and without regrouping, using concrete materials (e.g., base ten materials, counters), student generated algorithms, and standard algorithms;	Unit 4 All Lessons Unit 7 All Lessons
add and subtract money amounts to 100¢, using a variety of tools (e.g., concrete materials, drawings) and strategies (e.g., counting on, estimating, representing using symbols).	Unit 3 L6, L7 Unit 4, Math Centre "Store Front,"

## Measurement

Overall Expectations

*By the end of Grade 2, students will:*

- estimate, measure, and record length, perimeter, area, mass, capacity, time, and temperature, using non-standard units and standard units;
- compare, describe, and order objects, using attributes measured in non-standard units and standard units.

Students will:

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
<i>Attributes, Units, and Measurement Sense</i> choose benchmarks – in this case, personal referents – for a centimetre and a metre (e.g., “My little finger is about as wide as one centimetre. A really big step is about one metre.”) to help them perform measurement tasks;	Unit 8 L2, L3
estimate and measure length, height, and distance, using standard units (i.e., centimetre, metre) and non-standard units;	Unit 8 L1, L2, L3, L4
record and represent measurements of length, height, and distance in a variety of ways (e.g., written, pictorial, concrete);	Unit 8 L1, L2, L3, L4, L5
select and justify the choice of a standard unit (i.e., centimetre or metre) or a non-standard unit to measure length (e.g., “I needed a fast way to check that the two teams would race the same distance, so I used paces.”);	Unit 8 L5 Also Unit 8 Centres, “Try a Measure”
estimate, measure, and record the distance around objects, using non-standard units;	Unit 8 L6
estimate, measure, and record area, through investigation using a variety of non-standard units (e.g., determine the number of yellow pattern blocks it takes to cover an outlined shape);	Unit 8 L7
estimate, measure, and record the capacity and/or mass of an object, using a variety of non-standard units (e.g., “I used the pan balance and found that the stapler has the same mass as my pencil case.”);	Unit 11 L1, L2, L3, L4, L5
tell and write time to the quarter-hour, using demonstration digital and analogue clocks (e.g., “My clock shows the time recess will start [10:00], and my friend’s clock shows the time recess will end [10:15].”);	Unit 3 L3

<b>Specific Expectations</b>	<b><i>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</i></b>
construct tools for measuring time intervals in non-standard units (e.g., a particular bottle of water takes about five seconds to empty);	Unit 3 L1
describe how changes in temperature affect everyday experiences (e.g., the choice of clothing to wear);	Unit 3 Launch, L5
use a standard thermometer to determine whether temperature is rising or falling (e.g., the temperature of water, air);	Unit 3 L5
<i>Measurement Relationships</i> describe, through investigation, the relationship between the size of a unit of area and the number of units needed to cover a surface;	Unit 8 L7 – Activity Bank “Different Units”
compare and order a collection of objects by mass and/or capacity, using non-standard units (e.g., “The coffee can holds more sand than the soup can, but the same amount as the small pail.”);	Unit 11 L1, L3, L4
determine, through investigation, the relationship between days and weeks and between months and years.	Unit 3 L4 Also, Building a Math Community (TG module)

## Geometry and Spatial Sense

Overall Expectation

*By the end of Grade 2, students will:*

- identify two-dimensional shapes and three-dimensional figures and sort and classify them by their geometric properties;
- compose and decompose two-dimensional shapes and three-dimensional figures;
- describe and represent the relative locations of objects, and represent objects on a map.

Students will:

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
<i>Geometric Properties</i> distinguish between the attributes of an object that are geometric properties (e.g., number of sides, number of faces) and the attributes that are not geometric properties (e.g., colour, size, texture), using a variety of tools (e.g., attribute blocks, geometric solids, connecting cubes);	Unit 6 L1, L2, with supporting TG activity
identify and describe various polygons (i.e., triangles, quadrilaterals, pentagons, hexagons, heptagons, octagons) and sort and classify them by their geometric properties (i.e., number of sides or number of vertices), using concrete materials and pictorial representations (e.g., “I put all the figures with five or more vertices in one group, and all the figures with fewer than five vertices in another group.”);	Unit 9 L1, L2, L3
identify and describe various three-dimensional figures (i.e., cubes, prisms, pyramids) and sort and classify them by their geometric properties (i.e., number and shape of faces), using concrete materials (e.g., “I separated the figures that have square faces from the ones that don’t.”);	Unit 6 L1, L2
create models and skeletons of prisms and pyramids, using concrete materials (e.g., cardboard; straws and modelling clay), and describe their geometric properties (i.e., number and shape of faces, number of edges);	Unit 6 L5, L6
locate the line of symmetry in a two-dimensional shape (e.g., by paper folding; by using a Mira);	Unit 9 L4, L5

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
<i>Geometric Relationships</i> compose and describe pictures, designs, and patterns by combining two-dimensional shapes (e.g., “I made a picture of a flower from one hexagon and six equilateral triangles.”);	Unit 9 Launch
compose and decompose two-dimensional shapes;	Unit 9 Launch, L2 Activity “Class Cover-Ups”
cover an outline puzzle with two-dimensional shapes in more than one way;	Unit 8 L8 Unit 9 Math Centre “Tangrams”
build a structure using three-dimensional figures, and describe the two-dimensional shapes and three-dimensional figures in the structure (e.g., “I used a box that looks like a triangular prism to build the roof of my house.”);	Unit 6 L3, L4
<i>Location and Movement</i> describe the relative locations (e.g., beside, two steps to the right of) and the movements of objects on a map (e.g., “The path shows that he walked around the desk, down the aisle, and over to the window.”);	Unit 9 L7
draw simple maps of familiar settings, and describe the relative locations of objects on the maps;	Unit 9 L7, see Cross-Curriculum Connection, Science
create and describe symmetrical designs using a variety of tools (e.g., pattern blocks, tangrams, paper and pencil).	Unit 9 Math Centres: Technology Centre; Miras and More

## Patterning and Algebra

Overall Expectations

*By the end of Grade 2, students will:*

- identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns;
- demonstrate an understanding of the concept of equality between pairs of expressions, using concrete materials, symbols, and addition and subtraction to 18.

Students will:

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
<i>Patterns and Relationships</i> identify and describe, through investigation, growing patterns and shrinking patterns generated by the repeated addition or subtraction of 1's, 2's, 5's, 10's, and 25's on a number line and on a hundreds chart (e.g., the numbers 90, 80, 70, 60, 5, 40, 30, 20, 10 are in a straight line on a hundreds chart);	Unit 2 L3, L8, L9
identify, describe, and create, through investigation, growing patterns and shrinking patterns involving addition and subtraction, with and without the use of calculators (e.g., $3 + 1 = 4$ , $3 + 2 = 5$ , $3 + 3 = 6$ , ...);	Unit 2 L4, L5, L9, with supporting TG Activity
identify repeating, growing, and shrinking patterns found in real-life contexts (e.g., a geometric pattern on wallpaper, a rhythm pattern in music, a number pattern when counting dimes);	Unit 1 L2 Unit 2 L9
represent a given growing or shrinking pattern in a variety of ways (e.g., using pictures, actions, colours, sounds, numbers, letters, number lines, bar graphs);	Unit 2 L9 Unit 3 L6
create growing or shrinking patterns;	Unit 2 L9 Unit 3 L6
create a repeating pattern by combining two attributes (e.g., colour and shape; colour and size);	Unit 1 L2
demonstrate, through investigation, an understanding that a pattern results from repeating an operation (e.g., addition, subtraction) or making a repeated change to an attribute (e.g., colour orientation);	Unit 1 L2, L3, L4

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
<p><i>Expressions and Equality</i> demonstrate an understanding of the concept of equality by partitioning whole numbers to 18 in a variety of ways, using concrete materials (e.g., starting with 9 tiles and adding 6 more tiles gives the same result as starting with 10 tiles and adding 5 more tiles);</p>	<p>Unit 2 L4, L5, L6 Unit 2 Centre “Making Number Sentences”</p>
<p>represent, through investigation with concrete materials and pictures, two number expressions that are equal, using the equal sign (e.g., “I can break a train of 10 cubes into 4 cubes and 6 cubes. I can also break 10 cubes into 7 cubes and 3 cubes. This means <math>4 + 6 = 7 + 3</math>.”);</p>	<p>Unit 2 L4, L5, L6 Unit 2 Centre “Making Number Sentences”</p>
<p>determine the missing number in equations involving addition and subtraction to 18, using a variety of tools and strategies (e.g., modelling with concrete materials, using guess and check with and without the aid of a calculator);</p>	<p>Unit 2 L4, L5</p>
<p>identify, through investigation, and use the commutative property of addition (e.g., create a train of 10 cubes by joining 4 red cubes to 6 blue cubes, or by joining 6 blue cubes to 4 red cubes) to facilitate computation with whole numbers (e.g., “I know that <math>9 + 8 + 1 = 9 + 1 + 8</math>. Adding becomes easier because that gives <math>10 + 8 = 18</math>.”);</p>	<p>Unit 2 L4, L5</p>
<p>identify, through investigation, the properties of zero in addition and subtraction (i.e., when you add zero to a number, the number does not change; when you subtract zero from a number, the number does not change).</p>	<p>Unit 2 L4, with supporting TG note</p>

## Data Management and Probability

Overall Expectations

*By the end of Grade 2, students will:*

- collect and organize categorical or discrete primary data and display the data, using tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers, with labels ordered appropriately along horizontal axes, as needed;
- read and describe primary data presented in tally charts, concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers;
- describe probability in everyday situations and simple games.

Students will:

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics makes Sense Grade 2, Lessons:</b>
<i>Collection and Organization of Data</i> demonstrate an ability to organize objects into categories, by sorting and classifying objects using two attributes simultaneously (e.g., sort attribute blocks by colour and shape at the same time);	Unit 1 L1
gather data to answer a question, using a simple survey with a limited number of responses (e.g., What is your favourite season?; How many letters are in your first name?);	Unit 5 L4
collect and organize primary data (e.g., data collected by the class) that is categorical or discrete (i.e., that can be counted, such as the number of students absent), and display the data using one-to-one correspondence in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers (e.g., tally charts, diagrams), with appropriate titles and labels and with labels ordered appropriately along horizontal axes, as needed;	Unit 5 L1, L2, L3, L4 Unit 8 L1, L5 Unit 11 L1
<i>Data Relationships</i> read primary data presented in concrete graphs, pictographs, line plots, simple bar graphs, and other graphic organizers (e.g., “Our bar graph shows that 4 more students walk to school than take the bus.”);	Unit 5 L5
pose and answer questions about class-generated data in concrete graphs, pictographs, line plots, simple bar graphs, and tally charts (e.g., Which is the least favourite season?);	Unit 5 L4, L5, L6

<b>Specific Expectations</b>	<b>Addison Wesley Mathematics Makes Sense Grade 2, Lessons:</b>
distinguish between numbers that represent data values (e.g., “I have 4 people in my family.”) and numbers that represent the frequency of an event (e.g., “There are 10 children in my class who have 4 people in their family.”);	Unit 5 L3, L4, L5
demonstrate an understanding of data displayed in a graph (e.g., by telling a story, by drawing a picture), by comparing different parts of the data and by making statements about the data and by making statements about the data as a whole (e.g., many students were absent each month. More students were away in January than in September.”);	Unit 5 L5
<i>Probability</i> describe probability as a measure of the likelihood that an event will occur, using mathematical language (i.e., impossible, unlikely, less likely, equally likely, more likely, certain) (e.g., “If I take a new shoe out of a box without looking, it’s equally likely that I will pick the left shoe or the right shoe.”);	Unit 5 L1, L2
describe the probability that an event will occur (e.g., getting heads when tossing a coin, landing on red when spinning a spinner), through investigation with simple games and probability experiments and using mathematical language (e.g., “I tossed 2 coins at the same time, to see how often I would get 2 heads. I found that getting a head and a tail was more likely than getting 2 heads.”).	Unit 5 L1, L2

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